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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,965	05/03/2006	Peter Urbach	022862-1102-00	1394
23409 7590 05/27/2009 MICHAEL BEST & FRIEDRICH LLP 100 E WISCONSIN AVENUE Suite 3300 MILWAUKEE, WI 53202				
EXAMINER				
MOK, ALEX W				
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05/27/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/577,965

**Applicant(s)**

URBACH ET AL.

**Examiner**

ALEX W. MOK

**Art Unit**

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 and 23-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 23-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/6/09 has been entered.

### ***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Electric Motor Comprising An Electronic Unit With A Punched Grid.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4, 6, 12-15, 19, 20 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. (US Patent No.: 4710795) in view of Armbruster et al. (US Patent No.: 4952829).

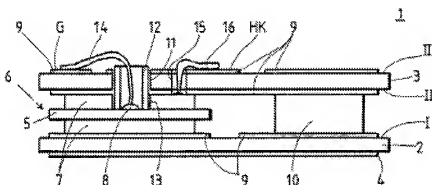
For claim 1, Nippert et al. teach the claimed invention comprising an electronic unit (reference numeral 1, figure 1) with a sandwich construction, which contains a first

**U.S. Patent**

**Dec. 1, 1987**

**Sheet 1 of 4**

**4,710,795**



**Fig. 1**

electrically conductive substrate and a second electric conductive substrate (reference numerals 2, 3), between which power components (reference numerals 5, 10) are located and electrically connected to both substrates, and a side of the second substrate facing away from the first substrate is equipped with additional electronic components (reference numeral 9). Nippert et al. does not specifically teach the substrate being a punched grid punched from a metal material, the punched grid being directly electrically and mechanically connected to the power components, the punched

grid supporting the power components, nor the substrates being extrusion coated with and totally encapsulated by a plastic body produced by injection molding in such a way that extensions of the punched grid protrude from the plastic body, and forming an electrical and/or mechanical interface for connecting additional motor components.

Armbruster et al. disclose a substrate being a punched grid (see figure 2,

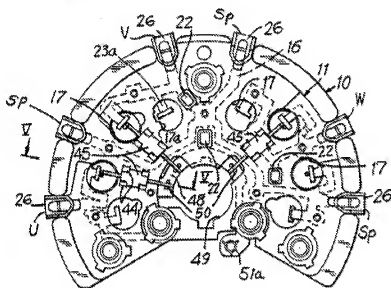
**U.S. Patent**

**Aug. 28, 1990**

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**4,952,829**

**FIG. 2**



reference numeral 16) made from a metal material and having plastic material being injection molded and enclosing the punched grid (see column 5, lines 44-64), and

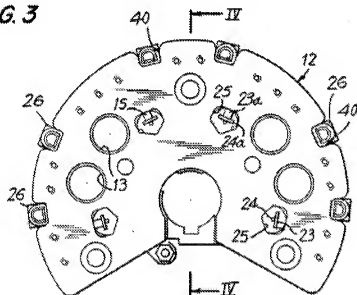
generator. The plate-shaped body of the circuit board 11 comprises insulating plastic, and a punched grid, 45 which consists of a suitable electrically conducting metal and is designated by 16, is embedded in the circuit board 11, i.e. the plastic material of the latter is injection molded around it. A possible embodiment form of such a punched grid 16 is shown in a more detailed manner in FIG. 7—this will be discussed in the following. 50

Since the punched grid 16, which is punched out of a suitable circular sheet metal blank (MS-plate), is still in one piece when inserted into the injection mold for producing the circuit board, the punched grid can be 55 introduced in the mold by an automatic inserting device without requiring manual intervention.

The plastic material of the circuit board then completely encloses the basic shape of the punched grid with the interconnections, wherein openings and passages 17 in optional form, e.g. circular or circle-segment 60 cut out portions, through which ends of the punched grid forming electrical connections emerge, remain open. These end connections are then bent either up-

having extensions for connecting to motor components (reference numerals 23, 23a, 45, see figures 2, 3).

**FIG. 3**



It would have been obvious modify the reference of Nippert et al. and have the plastic body coat the substrate and also have the extensions protrude from the plastic body, since the invention of Armbruster et al. is related to electronic components for a rectifier device (column 1, lines 5-24), and a person of ordinary skill would have been able to apply this configuration for the purpose of directly attaching additional components to the unit.

For claim 4, Nippert et al. disclose the claimed invention including the clips for connecting to the substrate (see column 1, lines 12-21), but does not specifically disclose the clips accommodating carbon brushes. It still would have been obvious to include this feature since it would be within the knowledge of a person skilled in the art to connect components to an electronic unit such as a clip for carbon brushes.

For claim 6, Nippert et al. disclose the claimed invention including a component for the holding element (reference numeral 12, figure 1), but do not specifically teach kl sdfjslkfjsdlkfslkfsl;fdlf forming holding elements on the punched grid. It would have been obvious for a person of ordinary skill to include this in the claimed invention for the purpose of holding power components for producing proper electrical connections for the punched grid.

For claim 12, Nippert et al. already disclose conductive surfaces and soldering for components (column 4, lines 40-50, and column 5, lines 32-35), but do not specifically teach a conductively adhesive surface for the power components and having solder bumps on the substrate. It would have been obvious for a person of

ordinary skill to modify the configuration and have bumps for the purpose of better connection conductively.

For claim 13, Nippert et al. teach the claimed invention but do not specifically disclose having MOSFETs on the module. It still would have been well within the knowledge of a person skilled in the art to include this configuration since MOSFETs are well known power components in the art and a skilled person can simply select this component to include on the unit.

For claims 14 and 15, Nippert et al. teach the claimed invention but do not specifically disclose arranging power components on the substrate and also having the substrates be heat sinks. Since Nippert et al. already disclose heat sinks on the substrate (see column 3, lines 19-25), it would have been obvious to include these configurations since arranging components is a routine skill, and a person skilled in the art also could modify the heat sinks of Nippert et al. so that the substrates can also be heat sinks for the purpose of saving space on the unit and further reduce the costs.

For claim 19, when the electronic unit taught by the references of Nippert et al. and Armbruster et al. as explained above for claim 1 is implemented in an electric motor for adjusting parts of a motor vehicle, it would be well within the knowledge of a person of ordinary skill in the art to have the electronic unit be mounted in a particular way, such as radially from a shaft and opposite from a commutator, for the purpose of receiving optimal performance from the unit with respect to the arrangement of the motor.



For claim 20, the references of Nippert et al. and Armbruster et al. disclose the claimed electronic module as explained for claim 1 above.

For claim 24, Nippert et al. already teach the segments as illustrated in figures 5 and 6, and since the references of Nippert et al. and Armbruster et al. teach the structure of the substrates as explained for claim 1, a person of ordinary skill would have been able to form these segments using any method such as punching.

For claims 25-27, Nippert et al. and Armbruster et al. teach the claimed invention, but do not specifically disclose having the plastic molding compound of the plastic body be arranged in gaps and voids between the substrates and the power components, the plastic molding compound of the plastic body totally encapsulate the punched grid, the second substrate, the power components, and the electronic components, and have the side of the second substrate provide an outer surface and a side of the punched grid facing away from the second substrate provide an opposite outer surface, and the plastic compound cover the side of the second substrate and a side of the punched grid facing away from the second substrate. It would have been obvious to have these configurations, since all of these configurations would involve rearranging the location of the plastic molding compound component which is recognized as being a routine skill. A person of ordinary skill in the art would have been able to apply this technique for the purpose of improving the electrical and thermal performance of the motor.

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5. Claims 3, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. and Armbruster et al. as applied to claim 1 above, and further in view of Wolf et al. (WIPO document No.: WO 01/27997).

For claim 3, Nippert et al. teach the claimed invention except the extensions being contact points to external components.

Wolf et al. disclose these components (reference numerals 51-56, figures 1a-4).

WO 01/27997

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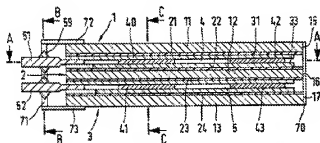


Fig. 1a

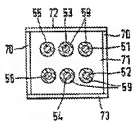


Fig. 1b

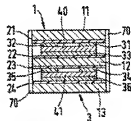


Fig. 1c

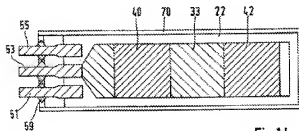


Fig. 1d

It would have been obvious for a person of ordinary skill to include this for the same reasons given for claim 1 above. The reference of Wolf et al. also discloses copper for this component (see column 5, lines 40+ of US equivalent of Wolf et al. (US Patent No. 6697257)).

For claim 16, Nippert et al. teach the claimed invention except the plastic body being formed by transfer molding with epoxy flowing between the substrates.

Wolf et al. disclose transfer molding for the substrates (see Wolf's English language equivalent US 6697257, column 2, lines 39-44).

In another exemplary embodiment, it is provided that the flowable, curable and heat-conducting medium comprises an injection molding composition. The stack comprising the carrier substrates and the semiconductor components can then be produced for instance by an injection molding process, or by transfer molding.

It would have been obvious for a person of ordinary skill to use this process for the plastic body for the purpose of effectively filling the gaps in a bubble-free manner and also protecting the components.

For claim 18, Nippert et al. teach the claimed invention except have the plastic body arranged on a separate module support and fixed by clips. Since Wolf et al. already teach plastic (reference numeral 90, figure 3a), and this configuration would simply separate the plastic body, it would have been obvious for a person of ordinary skill to apply the clip connection disclosed by Nippert et al. (column 1, lines 12-21) for the purpose of minimizing the cost of additional parts and processes.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. and Armbruster et al. as applied to claim 1 above, and further in view of Biswas et al. (US Patent No.: 5213748).

For claim 23, Nippert et al. and Armbruster et al. teach the claimed invention as explained for claim 1, but do not specifically disclose the punched grid formed from a copper sheet by means of punching, bending and embossing. Since Biswas et al. disclose this configuration (column 5, lines 2-9), it would have been obvious to include this for the purpose of improving the construction of the motor.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. and Armbruster et al. as applied to claim 1 above, and further in view of Azotea et al. (US Patent No.: 6060795).

For claim 2, the inventions of Nippert et al. and Armbruster et al. teach the claimed invention except for the extensions having bore holes. Azotea et al. disclose holes on a power module (see figures 1, 4A-4C). It would have been obvious to include holes in the inventions of Nippert et al. and Armbruster et al., since this configuration would further enable additional components to be stably attached to the unit.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. and Armbruster et al. as applied to claim 1 above, and further in view of Azotea et al. (US Patent No.: 6060795) and Wolf et al. (WIPO document No.: WO 01/27997).

For claim 10, the inventions of Nippert et al. and Armbruster et al. teach the claimed invention except for having ceramic for the substrate, a conductor layer, and have them connected through holes. The reference of Wolf et al. disclose ceramic for the substrate (column 6, lines 23-29), conductor tracks (column 6, lines 23-37), and it would have been obvious for a person of ordinary skill to apply the holes disclosed by Azotea et al. as explained for claim 2 to connect these components for the purpose of saving space of the electronic unit.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. and Armbruster et al. as applied to claim 1 above, and further in view of Satoh et al. (US Patent No.: 6274955).

For claim 5, the inventions of Nippert et al. and Armbruster et al. teach the claimed invention except for having the extensions be made of an electro-magnetic shielding material. Satoh et al. disclose a similar configuration for a vibration motor (see column 14, lines 48-55), and it would have been obvious to include this since it has been held that selecting a material for a particular component would be a routine skill in the art as exhibited by Satoh et al.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al., Armbruster et al. and Wolf et al. as applied to claim 3 above, and further in view of Pickles et al. (US Patent No.: 5697811).

For claim 7, the inventions of Nippert et al. and Ambruster et al. teach the claimed invention except for the contact points being interfaces using nip-clinch technology. Pickles et al. already disclose nip-clinch connectors (see Abstract), and it would have been obvious for a person of ordinary skill to apply this known method for the purpose of having a cost-effective method of joining components.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. and Ambruster et al. as applied to claim 1 above, and further in view of Giacomini et al. (US Patent Application Pub. No.: US 2003/0080772 A1).

For claim 8, the inventions of Nippert et al. and Ambruster et al. teach the claimed invention except for having a microprocessor and a position sensory mechanism as electronic components on the substrate. Giacomini et al. uses sensors and microprocessors in an electronic module (see paragraph [0052]), and it would have been obvious for a person of ordinary skill to apply this for the purpose of combining different technologies in one module to further reduce costs.

12. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. and Ambruster et al. as applied to claim 1 above, and further in view of Viswanathan et al. (US Patent Application Pub. No.: US 2003/0128080 A1).

For claim 9, the inventions of Nippert et al. and Ambruster et al. teach the claimed invention except for having an electrically conductive surface for the substrate, and having the electronic components equipped by means of soldering or conductive

adhesion using flip-chip technology. Nippert et al. already disclose the substrate having a conductive surface (column 4, lines 39-50) and components being fixed using soldering (column 5, lines 32-34), and Viswanathan et al. uses flip-chip technology for an electronic module (see paragraph [0022]). It would have been obvious for a person of ordinary skill to include this technique for the purpose of reducing substrate space and further reduce costs.

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. and Armbruster et al. as applied to claim 1 above, and further in view of Feyngenson et al. (US Patent No.: 6440750).

For claim 11, the inventions of Nippert et al. and Armbruster et al. teach the claimed invention except for having the power components be bare die elements. Feyngenson et al. disclose bare die elements for a module (see column 17, lines 5-8). It would have been obvious for a person of ordinary skill in the art to apply this without a housing for the purpose of taking up less construction space for the module.

14. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippert et al. and Armbruster et al. as applied to claim 1 above, and further in view of Weber et al. (US Patent No.: 6317332).

For claim 17, the inventions of Nippert et al. and Armbruster et al. teach the claimed invention except for having the plastic body be extrusion coated with another plastic. Weber et al. disclose extrusion coating for a electronic module (see column 6,

lines 20-30), and it would have been obvious for a person of ordinary skill to use this for the purpose of forming the housing cover for the unit.

### ***Response to Arguments***

15. Applicant's arguments with respect to claims 1-20 and 23-27 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mayer et al. (US 5652471) which discloses an embodiment for a punched grid.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX W. MOK whose telephone number is (571)272-9084. The examiner can normally be reached on 7:30-5:00 Eastern Time, 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen P. Leung can be reached on (571) 272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Supervisory Patent Examiner, Art Unit 2834

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Examiner, Art Unit 2834